Blaze Farm, Wildboarclough

Ecological Survey Report

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Title: **Blaze Farm, Wildboarclough**
Ecological Survey Report

Client: VWB Architects Ltd. on behalf of Mr & Mrs Waller

Date: August 2018

Status	Date	Prepared by	Reviewed by	Approved by
V1 (Interim)	04/07/2018	Eve Loxham Assistant Ecologist	Kelly MacGillivray Senior Ecologist	Kelly MacGillivray Senior Ecologist
V2 (Full)	03/08/2018	Eve Loxham Assistant Ecologist	Neil Lee-Gallon Principal Ecologist	Neil Lee-Gallon Principal Ecologist

SUMMARY

NLG Ecology Ltd (NLG) was commissioned by VWB Architects Ltd. on behalf of Mr. and Mrs. Waller in June 2018 to undertake an initial ecological survey of two buildings at Blaze Farm, Wildboarclough, Macclesfield, Cheshire due to plans to renovate the first floor of the barn (B1) and demolish the adjoining Disused Garages and Old Dairy (B2). The buildings were assessed in accordance with best practice guidance (Collins, 2016) for their bat roosting potential in terms of both evidence and suitable roosting features, and two ponds within 250m of the site were assessed for their suitability for great crested newt. Evidence of, and potential opportunities for, nesting birds were also recorded. A location plan of the site and figures are provided in Appendix 1, Photographs in Appendix 2 and relevant species legislation in Appendix 3.

The initial inspection was required to determine the potential presence of roosting bats across the areas subject to the proposals, and was carried out on the 18th June 2018 by Eve Loxham (Natural England Class Level 1 survey licence holder for bats 2017-28371-CLS-CLS and great crested newt 2017-27825-CLS-CLS).

B1 was found to be of moderate to high potential to roosting bats due to the presence of numerous cavities and gaps beneath the stone roof tiles, and cavities within the stone wall. This potential for bats was compounded by the optimal foraging habitat for bats in close proximity to Blaze Farm, which includes broadleaved woodland, field boundary hedge lines, riparian and grassland habitats. B2 buildings were found to have negligible bat roosting potential based on the absence of any bats during the inspection and the absence of any evidence of use by bats.

In light of B1's moderate to high bat roosting potential, and in accordance with best practice guidelines (Collins, 2016), three emergence/re-entry surveys were subsequently undertaken during the peak bat activity season of May to September (inclusive). Overall the surveys found that the barn is used for occasional summer day roosting by a peak count of one common pipistrelle bat (*Pipistrellus pipistrellus*). The identified roost location is shown on Figure 2 and Photograph 21. In light of the distance of the proposed works from the identified bat roost (as shown on Figure 2), a European Protected Species licence application to Natural England is likely not required. Precautionary working measures are recommended in order to ensure minimal risk of harm to bats. Further information in respect of bats is provided in the Conclusions and Recommendations section.

With regards to great crested newt, one of the ponds showed 'good' suitability for the species, whilst the other was assessed to be of 'poor' suitability. Due to the works on site being relatively small-scale and due to the fact that surrounding habitats will be largely untouched, with only small-scale de-vegetation likely required, potential impacts to any nearby great crested newt populations were deemed to be negligible. Furthermore, access to the site will be made via an existing hard standing track that enters the farm from the south and will therefore require no de-vegetation or additional compound/material storage areas to those already available. No further survey effort with regards to great crested newt is recommended, although precautionary measures are included within the Conclusions and Recommendations section.

Opportunities for, and evidence of, nesting birds are present on site in both the buildings and surrounding vegetation. Nesting bird checks will be required ahead of any de-vegetation or building works scheduled between March and August (inclusive) and if any active nests are found, exclusion zones will be required until any chicks have fledged. Replacement artificial hirundine nest cups are recommended to provide continued dedicated nesting opportunities.

This report is valid for 18 months from the date of the last bat survey on site i.e. until 1st March 2020.

CONTENTS

1 INTRODUCTION

1.1 Background

1.1.1 NLG Ecology Ltd (NLG) was commissioned by VWB Architects Ltd. on behalf of Mr. & Mrs. Waller in June 2018 to undertake an initial ecological survey of buildings located at Blaze Farm, Wildboarclough, Macclesfield, SK11 0BL (central grid reference SJ 97523 67564). The inspection was required in respect of the proposed conversion of the first floor of The Barn (B1) into holiday let accommodation, and the demolition of the Disused Garages and Dairy (B2). The proposals with respect to B1 will include the installation of approximately seven skylights on the north-western roof elevation, the modification of four skylights on the south-eastern roof elevation, and the renovation of the two redundant first floor rooms. The site is shown on Figure 1, with relevant buildings identified.

1.1.2 The inspection aimed to determine the potential presence of a bat roost or roosts within the affected areas of the buildings, both in terms of actual evidence and in the form of suitable features for roosting bats across the buildings' interiors and exteriors. In addition, consideration was given to the presence of breeding birds, again in terms of actual evidence and in terms of opportunities for such use (e.g. access points, ledges).

1.1.3 Due to the presence of a garden pond, the inspection also included a Habitat Suitability Index (HSI) assessment of the pond to determine the potential for the presence of great crested newt (*Triturus cristatus*) in the area.

1.1.4 Desk study data and the habitat surrounding the site have also been considered so that a wider context to the potential for roosting and foraging bats in the vicinity of Blaze Farm can be gained. Photographs of the property and surrounding areas are provided in Appendix 2.

1.1.5 The initial inspection was undertaken on 18th June 2018 by Eve Loxham, GradCIEEM, (Natural England Class Level 1 survey licence holder for bats 2017-28371-CLS-CLS and great crested newt 2017-27825-CLS-CLS). The preliminary bat roost assessment results from the initial survey are;

- B1 – **moderate to high** bat roosting potential
- B2 – **negligible** bat roosting potential

1.1.6 Therefore, and in line with best practice guidance (Collins, 2016), three bat emergence/re-entry surveys were recommended and subsequently carried out on B1, and no further surveys for bats were recommended for B2.

1.1.7 Relevant legislations that have informed survey effort are detailed in Appendix 3. Please note that the text provides a brief summary of the legislation in relation to bats in England and Wales and the original Acts, Regulations and any amendments should be referred to for the precise wording.

1.2 Bat Biology

1.2.1 Within the British Isles there are 17 resident (i.e. breeding) species of bat. Bats are nocturnal and feed entirely on insects. They use echolocation, a complex system similar to sonar, to navigate around their surroundings and to forage.

1.2.2 Depending on the species of bat, habitat requirements vary widely although features such as traditional pasture, woodland edges, parkland, and wetland are particularly good for bats as insects are abundant within these areas (Mitchell-Jones, 2004). Linear features such as hedgerows, tree lines and watercourses are important for commuting, as they assist navigation.

1.2.3 Bats utilise different roosts at different times of the year, and roost requirements vary between species. Typical roost sites include caves, mines, trees, and buildings. Bats hibernate between October and March and usually within a damp, unexposed roost which can maintain a relatively stable temperature such as thick stone walls, caves, cellars and mines. Around March, bats emerge from hibernation and gradually move to their summer roosts - during spring females gather together to form maternity colonies to give birth and rear their young. Summer and maternity roosts are typically found within man-made structures or suitable crevices in trees.

1.2.4 Birthing usually occurs late June – mid July, with the young able to fly within three to five weeks (Altringham, 2003). By the end of August, most of the young bats are independent and the colony begins to break up. Mating takes place between August and December either at autumn swarming sites or winter hibernation sites. Bat roost sizes can vary from individual bats found within summer roosts, to hundreds of bats found within maternity colonies or hibernation sites.

2 METHODOLOGY

2.1 Desk Study

1.1.1 Defra's Multi-Agency Geographic Information for the Countryside (MAGIC) website (http://magic.defra.gov.uk/MagicMap.aspx - accessed 04/07/2018) was searched for nearby records of granted European Protected Species Mitigation (EPSM) licence applications from Natural England and pertaining to roosting bats and great crested newt.

1.1.2 Open source data was also used to contextualise the site in terms of surrounding habitats.

2.2 Building Inspections

2.2.1 The building inspections adhered to guidance within the Bat Mitigation Guidelines (Mitchell-Jones, 2004) and within Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016). The survey involved external and internal examination of relevant areas in and around the house. Equipment used to support the assessment included binoculars, a high powered torch and a digital-zoom camera.

2.2.2 Throughout the inspections, evidence of use by bats was searched for in addition to suitable potential access and roosting points. Internally, where accessible and relevant, the buildings were inspected for evidence of bat use in the form of droppings, staining on crevices by fur oils or urine and prey residues (e.g. moth and butterfly wings) as well as the bats themselves.

2.2.3 The areas subject to the proposed works were assessed in accordance with best practice guidance (Collins 2016), as described in Table 1 below.

Table 1: Visual Assessment Criteria for Buildings

Suitability	Description Roosting habitats	Commuting and foraging habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger number of bats (i.e. unlikely to be suitable for maternity of hibernation). A tree of sufficient size and age to contain potential roosting features (PRF's) but with none seen from the ground of features seen with only very limited roosting potential.	Habitat that could be used by small numbers of commuting bats such as a happy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status.	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees. Scrub, grassland or water.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.	Continuous high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams , hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the

		wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to known roosts.

2.3 Emergence /Re-entry Surveys for Bats

2.3.1 Due to the moderate to high potential for roosting bats of B1, two/three emergence / re-entry surveys were recommended in accordance with best practice guidance (Collins, 2016).

2.3.2 For the dusk emergence surveys, surveyors adopted their positions 15 minutes prior to sunset and continued for 1.5 to 2 hours after sunset. The purpose was to observe and record any emerging bats from the building, and any wider commuting and foraging activity.

2.3.3 For the dawn re-entry survey surveyors adopted their positions 1.5 hours before sunrise, continuing until sunrise or just after (as dictated by light levels).

2.3.4 Species identification for the surveys was aided by EchoMeter real time expansion bat detectors as well as Magenta and Batbox Duet heterodyne detectors. The date and weather conditions for the surveys are presented in Table 2.

Table 2: Date and Weather Conditions for the Emergence/Re-entry Surveys

Date	Dusk/Dawn	Sunset/Sunrise time	Weather Conditions
02 July 2018	Dusk	21:39	Clear 1/8 cloud cover, mild and dry with a slight wind, gusting slightly throughout. 17.6°C at the start 15°C at the end.
17 July 2018	Dawn	05:02	7/8 could cover, mild and dry with a very light to no breeze (0 to 1/12). 13.8°C at the start, 14.7°C at the end.
1st August 2018	Dusk	21:04	Overcast with thin cloud cover 8/8, dry and mild with a light breeze gusting at times 2/12 average, 18.4°C at start, 17.7°C at end.

2.4 Breeding Birds

2.4.1 The building inspection included a visual search for evidence of breeding bird activity and potential access and nesting points, including identification of bird species either observed to be building or occupying a nest.

2.4.2 Relevant legislation afforded to birds is presented in Appendix 3.

2.5 Habitat Suitability Index (HSI) Assessment

2.5.1 The methodology for assessing ponds for their potential to support great crested newt adhered to the HSI devised by (Oldham *et al.,* 2000). The calculation of a HSI requires that the following 10 key habitat variables are recorded and assigned a numerical value, as shown in Table 3, below:

Table 3: Habitat Suitability Index Criteria for Assessment

No	HSI Category	HSI Criteria / Score
1	**Location**	Location A: optimal (1), north, central & southern England; Location B: marginal (0.5), northern Pennies, north/southern Scotland & small areas of Wales; Location C: unsuitable (0.01) Scotland, west of Wales & Cornwall.

2	**Pond Area**	Calculated based on pond area in metre squared.
3	**Pond Drying**	Never dries = 0.9; Rarely Dries = 1.0; Sometimes dries = 0.5; Dries annually = 0.1.
4	**Water quality**	Good = 1.0; Moderate = 0.67; Poor = 0.33; Bad = 0.01.
5	**Shade**	Calculated as a percentage, with shading up to 60% considered suitable for great crested newt. Shade cover greater than 60% progressively declines in value.
6	**Fowl**	Absent = 1; Minor = 0.67; Major = 0.01.
7	**Fish**	Absent = 1; Possible = 0.67; Minor = 0.33; Major = 0.01.
8	**Ponds**	Number of ponds occurring within 1km of survey pond and divided by Pi (3.14). Exclude ponds where major barrier such as roads exist.
9	**Terrestrial Habitat**	Good =1; Moderate = 0.67; Poor = 0.33; Bad = 0.01.
10	**Macrophytes**	Estimated percentage value of macrophyte cover (sum of emergent, floating, submerged plants reaching the surface, except duckweed).

2.5.2 The calculation of the Habitat Suitability Index (HSI) is according to the formula: HSI = (SI1 x SI2 x SI3 x SI4 x SI5 x SI6 x SI7 x SI8 x SI9 x SI10)1/10. This is a geometric mean, the tenth root of the product of all the suitability indices. The resulting HSI score is then allocated to the following categories of habitat suitability for great crested newt.

- <0.5 = poor
- 0.5 - 0.59 = below average
- 0.6 – 0.69 = average
- 0.7 – 0.79 = good
- >0.8 = excellent

2.6 Constraints

2.6.1 Due to the height of the barn (B1), construction of the roof and angle of view, it was difficult to search for the presence of bat droppings beneath identified features.

2.6.2 During the dusk emergence survey on the 2nd July 2018 and dawn re-entry survey on 18th July 2018, a security light was on on the north-eastern side of the lean-to extension on B1. This slightly limited visibility of the potential bat roosting features in the general area.

2.6.3 The dark colouration of the roof combined with low light levels during the dusk emergence survey made it difficult to pinpoint the exact location of the bat roost.

2.6.4 Whilst desk study records can help to inform and complement survey effort, they should not be treated as a comprehensive list of species present within the search area. Many species are under-recorded and a lack of records can reflect a lack of survey effort in certain areas rather than confirming absence of a species.

3 SURVEY FINDINGS

3.1 Desk Study

3.1.1 Blaze Farm is located within close proximity to several 'priority' habitats (as listed under the UK Biodiversity Action Plan, and now covered under the UK Post-2010 Biodiversity Framework), including broadleaved woodland, lowland meadows, good quality semi-improved grassland and conifer woodland. Additionally Clough Brook is located (at the nearest) approximately 410m west of the Disused Garages (B2). The surrounding habitats are considered to provide optimal foraging, and likely roosting, opportunities for several different species of bat. There are two ponds within 250m of the property, discussed in more detail in Section 3.5.

3.1.2 There are no statutory designated sites located on, or within 1km of, the proposal site. The nearest Site of Special Scientific Interest (SSSI) is Leek Moors SSSI approximately 1.2km south. This area is designated as a Special Protection Area (SPA) for Peak District Moors and a Special Area of Conservation (SAC) for South Pennine Moors.

3.1.3 The nearest open source record for a granted EPSM licence for bats is 1.5km north-west, dated 05/12/2011 to 30/09/2015 for the species common pipistrelle (*Pipistrellus pipistrellus*) and whiskered bat (*Myotis mystacinus*).

3.1.4 The nearest open source record for granted EPSM licence for great crested newt is 2.5km south, dated 09/09/2011 to 31/05/2017.

3.2 Building Inspections for Bat Roosting Potential

B1 – The Barn

3.2.1 The Barn is constructed of stone and is two-storey in height. It has a gable roof which is clad with stone roof tiles and stone ridge tiles. The ground floor of the building is currently used as commercial premises for the Tea Room, Craft Workshop and Toilet Block (from south-west to north-east respectively). The first floor of the building is currently redundant and used for storage.

External

Front (south-eastern elevation)

3.2.2 The front of The Barn (Photograph 1) contains four doorways and three windows on the ground floor, and three barn doors and one window on the first floor. All are timber framed and appear well-sealed to the stonework. The stonework in general is in good condition, with no obvious signs of mortar loss or erosion, and therefore no resulting gaps. Metal guttering and drainpipes are present, with no suitable bat roosting features behind.

3.2.3 The stone roof tiles are naturally variable in their structure and shape which creates an abundance of gaps, suitable for use by bats, beneath and in-between the tiles across the entire roof (e.g. Photograph 2). On this elevation there are four small skylights evenly spaced in the centre of the roof pitch. The gaps surrounding the tiles near to the skylights are comparatively larger and consequently more open (as shown on Photograph 2). There is a sparse covering of moss across the roof, which is particularly concentrated on the ridge tiles. Roof rafters are visible at the roof edges beneath the guttering.

Gable (north-eastern elevation)

3.2.4 This elevation (Photograph 3) contains a single doorway on the first floor, which is accessed by an external metal staircase. The gable faces the car park and a nearby farm building (approximately 30m north-east).

3.2.5 A single vertical ventilation slit is present towards the pitch of the roof, which is blocked internally. Adjoined to the north-west is a single storey lean-to building constructed of concrete breeze blocks and corrugated metal with a mono-pitch corrugated metal roof.

3.2.6 Towards the northern corner of the building there is a small gap (c. 10cm square) within the stonework (Photograph 4). There were no obvious bat droppings or staining beneath.

3.2.7 A strip of rendering is present directly beneath the rake tiles, which are generally tightly sealed, although there are a few small gaps between the tiles (e.g. Photograph 5). The end ridge tile is well-sealed at this elevation.

Rear (north-western elevation)

3.2.8 Along the length of the rear of The Barn is a single-storey concrete and corrugated metal lean-to building (as shown on Photograph 6). This section is unaffected by the current proposals. There is a strip of lead flashing where the two buildings join.

3.2.9 The stonework of The Barn is in comparatively poorer condition on this elevation, with some sections of missing mortar and stepped cracks between the stone bricks, which are suitable for use by bats (e.g. Photograph 7).

3.2.10 There are currently no skylights on this roof elevation. Wooden planks are suspended at the edge of the roof by metal supports. As on the front elevation, there is an abundance of gaps beneath the roof tiles. Sections of waterproof roof membrane extend outwards from the edge of the roof tiles in places.

Gable (south-western elevation)

3.2.11 This elevation is joined onto a separate, two-storey stone barn, which is on a lower level (Photograph 8). There are large gaps between the stone roof tiles, along with potential cavities within the stonework where mortar is missing on the north-western side of the gable (as shown on Photograph 8).

Internal

3.2.12 The internal (first floor) of the barn is a single, large space split into two rooms via a stone wall and associated open doorway arch in the centre (Photograph 9). The stonework of the walls and the wooden roof supports are all exposed. A waterproof roof membrane is present behind the roof rafters and purlins.

3.2.13 Due to the presence of skylights, the rooms are bright and filled with natural light, therefore presenting unsuitable light conditions for day roosting bats. There are gaps present within the stonework of the walls. However, the doors, windows and roof tile edges appear to be well-sealed and prevent wildlife access into the building.

3.2.14 **In summary, B1 was assessed to have moderate to high bat roosting potential, based on the abundance of potential roosting features, specifically within gaps of the stone roof tiles, and also within cavities of the stone wall on the rear and north-eastern elevations.**

B2 – The Disused Garages and Old Dairy

3.2.15 The Disused Garages consist of three single-storey buildings in a line (Photograph 10); the gable roofed 'Old Dairy' (B2a), a gable roofed garage (B2b) and a mono-pitched lean-to garage (B2c). There is a small section of flat roof connecting B2a and B2b. The buildings are set into a small hill of a paddock, such that the rear (southern aspects) is approximately only 1m in height from the ground.

B2a (Old Dairy)

3.2.16 This building is small and stone built with a 1996 date stone visible on the front gable. The roof appears to be constructed of corrugated asbestos sheeting and ridge. There are wooden tongue-and-groove roof coverings beneath. At the eastern side of the front elevation, there is a section of missing wooden roof lining (Photograph 11) which provides a large, open and continuous cavity along the entire length of the roof, through which light is visible. At the peak of the roof pitch there is another continuous, long and open cavity between the ridge board and ridge sheeting (Photograph 12). These features were thoroughly inspected with the aid of a torch and found to be free of bats or evidence of use by bats. The roof is heavily mossed on the western elevation and appears to have buckled due to the growth of a tree (now removed) at the south-western corner. There are two open windows on the eastern elevation which creates a bright and airy internal space.

3.2.17 B2a joins onto B2b via a small flat roofed section constructed of concrete and corrugated metal (Photograph 13). Towards the rear of the flat roof there is a small cavity within the stonework of B2a, however this feature was shallow and free of bats and evidence of use by bats.

B2b (central garage)

3.2.18 This building is a small, gable roofed building constructed of stone, with a corrugated metal roof. There is a large metal counterweight garage door at the front, and a small former dog entrance close to the ground towards the west. The stonework is generally in good condition; however there is a stepped crack to the west at the front elevation (Photograph 14), starting at approximately 1.5m in height continuing to the roof pitch, and at the deepest 10cm. This gap is partially cobwebbed and was thoroughly inspected using a torch, and found to be free of bats and evidence of use by bats. There are also gaps beneath the roof metal sheeting and the wall plate, however the resulting gaps are large, open and breezy (e.g. Photograph 15). Additionally, due to the fluctuating thermal properties of metal, these gaps are considered unsuitable for use by bats. On the eastern elevation, there is a dense growth of fern (*Dryopteris sp.*) within the stonework. Internally, the building is a single large and open space, with exposed roof sheeting and wooden supporting beams.

3.2.19 The interior is used for storage and there are old windows which are now in-filled to the back of the building. Two voids approximately 1m from the ground are present within the western stone wall which may provide wildlife access to B2c. Wildlife entry to the interior may be possible via gaps at the north-eastern corner; however, this area is covered by ferns on the exterior, so entry is considered unlikely.

B2c (western garage)

3.2.20 This is a small, lean-to, stone and corrugated metal, mono-pitched building to the east of B2b. There are double metal doors to the front. At the join with B2b, there is a vertical crack adjacent to the stonework, which is partially cobwebbed and free of bats and evidence of bats (Photograph 16) at the time of inspection.

3.2.21 Adjacent to the west is a small lean-to with a bitumen felted roof, within an area of grassland. At the south-eastern rear corner, there is a section of the stone wall which has collapsed and an associated large and open cavity (Photograph 17) has been created. This gap is considered to be too low in height for use by roosting bats.

3.2.22 Internally, the building is used for storage purposes. There is possible access for wildlife via the gap at the western corner between the wall plate and the metal roof sheeting. A stepped crack is present within the stonework of the eastern wall (Photograph 18), which runs from floor to ceiling. No bats or evidence of use by bats was identified within the gap.

3.2.23 **In summary, all buildings of B2 were assessed to have negligible potential to support roosting bats. Although some potential roosting features were identified, these were thoroughly inspected with the aid of a high powered torch and ladders, such that the entire gap was visible, and subsequently no evidence of bat use (past or present) was identified.**

3.3 Emergence/ Re-entry Surveys for Bats

3.3.1 As a result of the initial building inspection and the assessed **moderate to high** bat roosting potential of The Barn (B1), in line with best practice guidance three emergence / re-entry surveys were recommended. These were carried out on the 2nd July (dusk), 18th July (dawn) and 1st August (dusk). Detailed results for the emergence and re-entry surveys are provided in Appendix 4.

3.3.2 During the dusk emergence survey on 2nd July 2018, no bats were seen to emerge from B1. Activity from brown long-eared bats (*Plecotus auritus*) and common pipistrelle (*Pipistrellus pipistrellus*) was recorded from 22:19 to 22:44 and included foraging and commuting behaviours along the tree line to the north of the building, and around the barn.

3.3.3 No bats were seen to re-enter during the dawn re-entry survey on 18th July 2018. However, the level of nearby bat activity was markedly increased from the first dusk emergence survey. This is likely to be due to more optimal weather conditions i.e. the reduced wind speed experienced on the dawn re-entry survey. Activity was recorded from common pipistrelle, myotis and unidentified bat (not echolocating) from 03:27 until 04:33. Behaviours included commuting and foraging, largely concentrated to the east of the barn, and along the hedgerow to the north. Bats were also observed foraging over the roofline of the barn itself and over the courtyard areas.

3.3.4 Due to the level of bat activity recorded on the second survey, a third survey was recommended and subsequently undertaken on 1st August 2018. During the dusk emergence survey a common pipistrelle was recorded emerging from the rear elevation of the roof, towards the southern end (See Photograph 21 and Figure 2 for approximate location) at 21:33. This emergence time is typical of common pipistrelles, being 29 minutes after sunset (the average time for common pipistrelle emergence is 24.8 minutes after sunset, and the range is 6.9 to 42.7 minutes after sunset (Davidson-Watts & Jones, 2006)). Additional bat activity recorded during the survey included foraging and commuting of common pipistrelles, and one commuting pass of a soprano pipistrelle from 21:16 to 22:16. The main areas of foraging included between the barn and opposite farm building at the front elevation, and along the tree line to the north. A common pipistrelle was observed commuting past the surveyor positioned at the front of the barn early in the survey at 21:16; it is assumed that this bat emerged from a nearby farm building / house on site.

3.3.5 **The conclusion of the emergence and re-entry surveys for bats is that the barn is used as an occasional summer day roost for a peak count of one common pipistrelle bat.**

3.4 Breeding Birds

3.4.1 Active hirundine nests were observed on the south-eastern elevation adjacent to the rafters at the edge of the roof of The Barn (B1), and also within the interior of the Old Dairy (B2). The vegetation adjacent to the B2 buildings also has the potential to support nesting birds. Peacocks were observed roosting on the roof of B1 and B2. Refer to Section 4.2 for recommendations regarding breeding birds.

3.5 HSI Assessment - Great Crested Newt

3.5.1 Table 4 presents the findings of the HSI assessments. The table illustrates that Pond A (Photograph 19) was assessed to be of 'poor' value to great crested newt, and Pond B (Photograph 20) was considered to be of 'good' value to great crested newt. Pond descriptions are provided in Table 4, below. The two ponds are present within the grounds of the farmhouse to the north-west of the farm. The ponds are approximately 50m from The Barn (B1) and 60m from the Disused Garages and Old Dairy (B2) at the closest. A small pathway dissects the two ponds. At the time of surveying, the water level was low for both ponds. At times of higher water levels the two ponds are connected by a pipe which runs beneath the footpath in the centre.

3.5.2 **Table 4 Habitat Suitability Index Survey Findings**.

HSI Category	Pond A	Pond B
Location	1	1
Pond Area	0.05	0.35
Pond Drying	0.5	1
Water Quality	0.01	0.67
Shade	1	1
Fowl	0.01	0.67
Fish	1	1
Ponds	0.62	0.62
Terrestrial Habitat	0.33	0.67
Macrophytes	0.3	0.5
HSI Score	**0.21 Poor**	**0.71 Good**

3.5.3 **Table 5 Pond Descriptions**

Pond ref	Description
Pond A	Man-made, semi-circular pond, within semi-improved neutral grassland garden area of the farmhouse. Grass is maintained at a short sward and there is evidence of poaching by wildfowl (ducks and geese present during the survey). There is no emergent vegetation, and nearby dense grassland or scrub vegetation is limited. A stone wall bounds the pond embankment to the north-west. No fish were observed.
Pond B	Man-made pond comparatively larger than Pond A, kidney shaped with a small island of tall ruderal vegetation (dominated by rosebay willowherb (*Chamaenerion angustifolium*)) in the centre. Vegetation at the pond edges includes yellow flag iris (*Iris pseudacorus*), hard rush (*Juncus effusus*), common nettle (*Urtica dioica*), cock's-foot grass (*Dactylis glomerata*) and ragged robin (*Lychnis flos-cuculi*). Emergent vegetation includes yellow pond lily (*Nuphar lutea*), waterlily (*Nymphaea* sp.), duckweed (*Lemnoideae* sp.) and Canadian waterweed (*Elodea canadensis*). A stone wall bounds the pond embankment to the south-east. The pond is relatively shallow, no fish were observed and an abundance of tadpoles were identified within the centre of the pond. The pond has a good diversity of aquatic invertebrates including greater water boatman (*Notonectidae sp.*), caddis larva (*Trichoptera sp*.) and pond skater (*Gerridae sp.*) briefly observed during the survey.

3.5.4 Canadian waterweed observed in Pond B is listed on Schedule 9 of the Wildlife & Countryside Act 1981 (as amended) and therefore it is illegal to prevent its spread. For more information refer to section 4.4.

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 Roosting Bats

4.1.1 Following an initial building inspection and three dusk emergence / dawn re-entry surveys for bats at the Barn, Blaze Farm, one occasional summer day roost for a peak count of one common pipistrelle bat has been identified. The roost is located on the rear (north-western) elevation of the barn, towards the south-western end as shown on Photograph 21 and approximated on Figure 2. The exact feature in use was not identified, however in the general area there are an abundance of lifted roof slates which have the potential to be used by roosting bats.

4.1.2 Review of the most recent proposed north-western elevation by VWB Architects dated March 2018 details the installation of three black conservation type rooflights generally focussed to the centre of the roof, see Figure 2. The location of the identified bat roost is a distance of approximately 5m from the nearest proposed new skylight (estimated using MAGIC maps measuring tool). Therefore, and depending on the methodology used to install the new skylights, the recommendations with regards to roosting bats are provided below.

Method 1 - Bat roost not physically impacted

4.1.3 Providing the identified bat roost is physically avoided throughout the building works (this includes site contractors 'walking over' the area or the placement of materials or equipment over the identified bat roost) then a Natural England licence will not be required and the works can go ahead the following under precautionary working measures;

- All relevant contractors on site will be given a toolbox talk by a bat licenced ecologist immediately prior to the commencement of works affecting the roof structure to ensure awareness of the legal protection afforded to bats and what to do in the event of finding one during unsupervised works.

- The areas around the new skylights within the roof on the rear elevation will be subject to a pre-works check by a bat licenced ecologist. This will involve the use of a high-powered torch and/or an endoscope to search beneath the affected roof slates. This will require the provision of access to the roof by means of scaffolding or other methodology. If any bats are identified then works must stop in the immediate area and a licence will be required from Natural England in order to lawfully destroy the roost.

- As the roost type (occasional summer day roost) and species concerned (common pipistrelle) are of relatively low conservation value (Mitchell-Jones, 2004), there are no timing constraints for the works, although it is recommended that the months of May to August are avoided if at all possible.

- Should bats be found at any time during works when the licensed ecologist is not present on site, then works in that immediate area will stop, the ecologist will be contacted and will attend site.

Method 2 – Bat roost physically impacted

4.1.4 If the proposed works cannot physically avoid the identified bat roost (e.g. the roof will have to be stripped back across its entirety or materials, contractors and equipment cannot avoid the general area) then a European Protected Species Mitigation licence from Natural England will be required to lawfully destroy the roost. The identified bat roost fits the Natural England criteria for inclusion in the 'low impact bat licence CL21' which is used for licensable works affecting common or widespread bat species and low conservation status roosts. Neil Lee-Gallon of NLG Ecology is registered ecological consultant with a low impact bat licence. Mitigation in the form of a replacement bat box would likely be required, along with precautionary working measures as described above.

4.2 Breeding Birds

4.2.1 Active hirundine nests were observed beneath the eaves of The Barn (B1) and also within the Old Dairy (B2a). Opportunities for nesting are also present within the boundary vegetation close to B2. Any devegetation works required should be undertaken outside of the main bird nesting season, which runs from March to August inclusive (i.e. carry out works from September to February). Should works to The Barn (B1) exterior, and/or demolition of B2 and/or devegetation works be required during the nesting season, then an ecologist should carry out a check for active nests no more than 24hours in advance of the commencement of works. If active nests, nests under construction, or young birds that have not fledged the nest are present, then a species-specific exclusion zone will be required around the nest(s). Works can then only proceed once the ecologist has confirmed that the young have fledged the nest.

4.2.2 Compensatory nesting provision, including artificial nest cups suitable for hirundine species, are recommended following completion of the works to B1 and B2 so as to provide alternative opportunities in replacement of those lost from B2a. These should be installed at the eaves of a nearby building at a minimum height of 2m above ground for house martin (*Delichon urbicum*), and within a nearby suitable building that is to remain open and accessible for birds throughout the breeding season for barn swallow (*Hirundo rustica*).

4.3 Great Crested Newt

4.3.1 One of the two ponds assessed (in accordance with Oldham *et al*. 2000) showed 'good' suitability for great crested newt, whilst the other showed 'poor' suitability. Due to the works on site being relatively small-scale and due to the fact that the surrounding habitats will be largely untouched, with only small-scale devegetation likely required, potential impacts to any nearby great crested newt populations are deemed to be negligible. Furthermore, access to the site will be made via an existing hard standing track that enters the farm south and will therefore require no de-vegetation to facilitate this, or additional compound/material storage areas to those already available.

4.3.2 No further survey effort with regards to great crested newt is therefore recommended due to the negligible risk of harm. During works to the Disused Garages' interior (e.g. when stored materials across the ground floor are cleared away), if any amphibians or small mammals (for example hedgehog *Erinaceus europaeus*) are found within this area, works should cease and the animal(s) should be carefully relocated to a suitable nearby area that will not be affected by the works or associated disturbance. If any newt is found, works should cease and a photograph should be sent to the ecologist if possible; if the newt is great crested, advice may need to be sought from Natural England on how to proceed. The discovery of a great crested newt in this area is considered to be highly unlikely; however an identification aid for the species is included in Appendix 5.

4.4 Invasive Aquatic Plant

4.4.1 Canadian waterweed identified within Pond B is listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) as an invasive and non-native species. Current proposals do not indicate that the pond will be impacted upon by the works; however the landowner should be made aware of its presence and care should be taken to avoid the disturbance and spread of this species. Should the current scheme of works alter such that the pond will be impacted upon, then control measures may be required. Information about the identification of this species can be downloaded from the Non Native Species Secretariat (NNSS) website (http://www.nonnativespecies.org/index.cfm?sectionid=47 – listed under Canadian waterweed on this page).

5 REFERENCES

Altringham, J. (2003). British Bats. Collins.

Collins, J. (ed.) (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London.

Davidson-Watts, I. & Jones, G. (2006). *Differences in foraging behaviour between* Pipistrellus pipistrellus *(Schreber, 1774) and Pipistrellus pygmaeus (Leach, 1825).* Journal of Zoology, **268** (1).

Google Maps (https://www.google.co.uk/maps - accessed on 04/07/2018)

MAGIC Maps (http://magic.defra.gov.uk/MagicMap.aspx - accessed on 04/07/2018)

Mitchell-Jones, A.J, (2004). Bat Mitigation Guidelines. English Nature, Peterborough.

Non Native Species Secretariat (NNSS) (http://www.nonnativespecies.org/index.cfm?sectionid=47 – accessed on 04/07/2018)

Oldham, R. S, Keeble, J, Swan, M.J.S & Jeffcote, M. (2000): *Evaluating the suitability of habitat for the great crested newt.* The Herpetological Journal Vol 10, No 4. Pages 143-156.

VWB Architects. (2018). Proposals Barn – Revised Elevations & Section. Alterations Blaze Farm, Wildboarclough, Cheshire, Sk11 0BL.

APPENDIX 1 – FIGURES

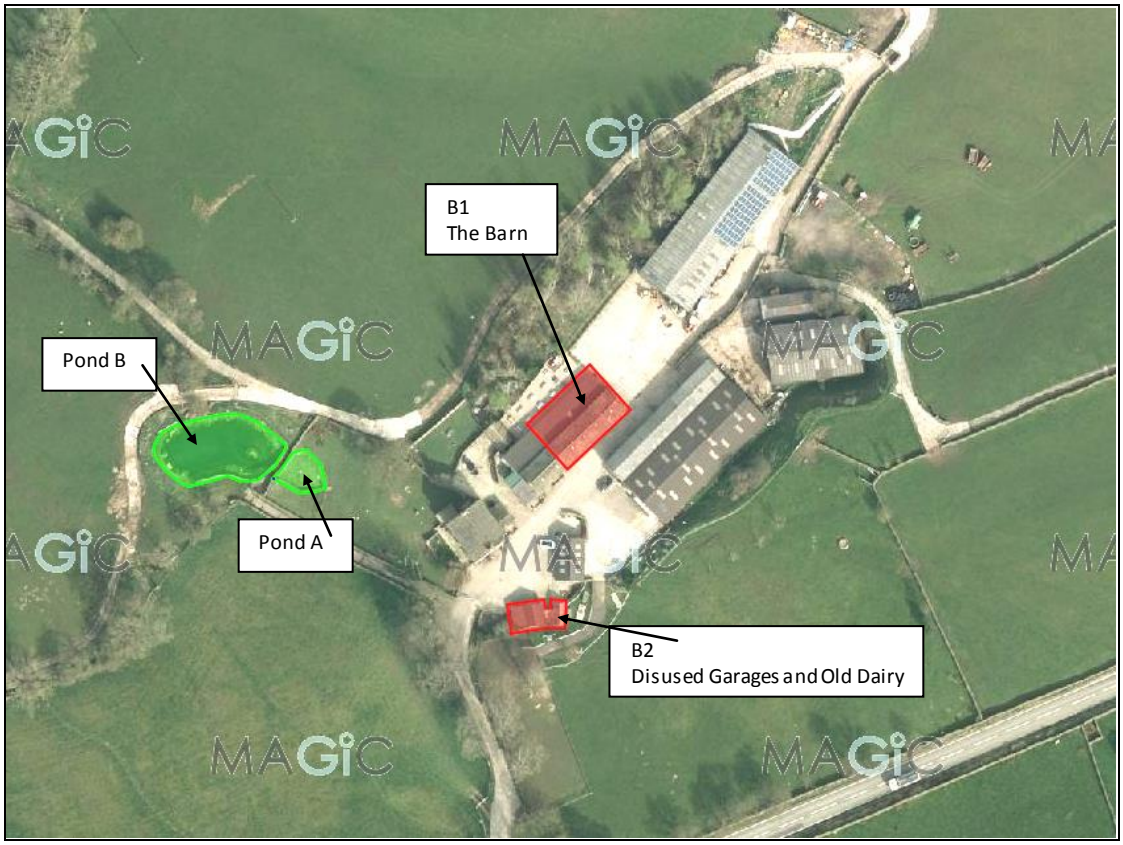


Figure 1: Location of buildings and ponds at Blaze Farm. Screenshot taken from Magic Maps (http://magic.gov.uk/magicmap.aspx).

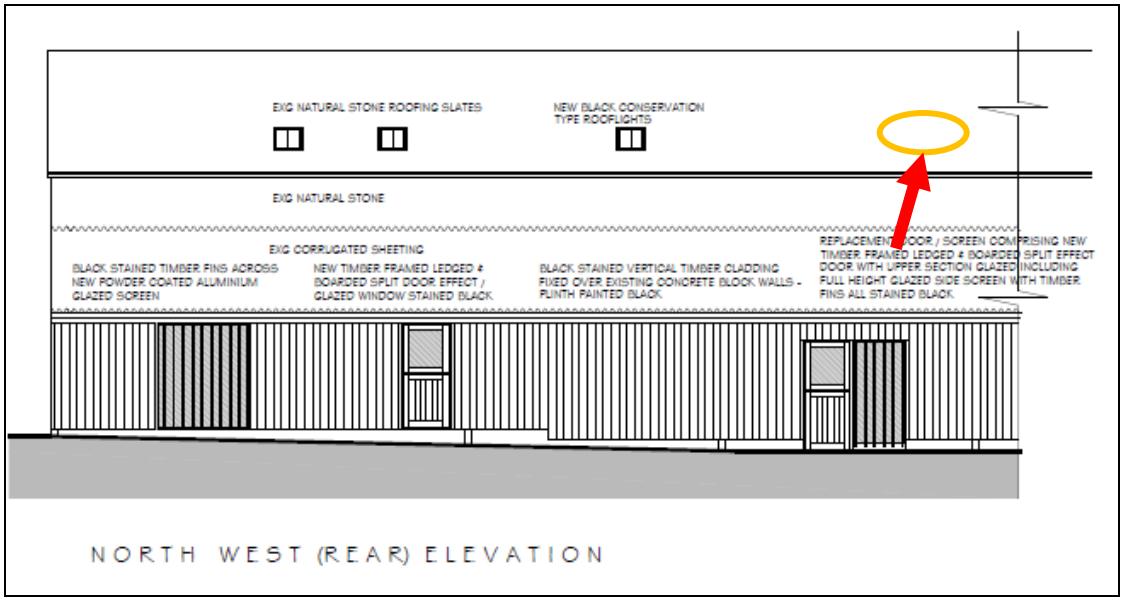


Figure 2. Proposed north-west elevation showing the approximate location of the common pipistrelle occasional day roost. Image taken from 'Proposals Barn – Revised Elevations & Section' (VWB Architects, 2018).

APPENDIX 2 - PHOTOGRAPHIC PLATES

Photograph 1. Front (south-eastern elevation).

Photograph 2. Example gaps beneath roof tiles and adjacent to the skylights on the front elevation.

Photograph 3. North-eastern gable elevation.

Photograph 4. Small gap within the stonework on the north-eastern gable.

Photograph 5. Example gaps beneath roof tiles on the north-eastern gable.

Photograph 6. Rear elevation.

Photograph 7. Example stepped crack and gaps between the stonework of the rear elevation.

Photograph 8. South-western gable, with gaps in the stonework and beneath roof tiles highlighted.

Photograph 9. Internal space (first floor).

Photograph 10. Overview of B2 buildings.

Photograph 11. B2a; location of large open cavity.

Photograph 12. B2a, location of cavity at roof peak

Photograph 13. Flat roof joint between B2a and B2b.

Photograph 14. Cobwebbed gap within the stonework of B2b.

Photograph 15. Example large and open gap beneath the metal roof sheeting of B2b.

Photograph 16. Vertical gap between B2b and B2c

Photograph 17. Area of wall collapse of B2c.

Photograph 18. Stepped crack within the interior eastern stone wall of B2c.

Photograph 19. Pond A.	**Photograph 20.** Pond B.
	

Photograph 21. Location of occasional day roost for a peak count of one common pipistrelle.

APPENDIX 3 - LEGISLATION

Bats

All UK bat species receive full protection (Schedule 5 species) under the Wildlife and Countryside Act 1981, which is further amended by the Countryside and Rights of Way Act 2000 and the Conservation of Habitats and Species Regulations 2010. Taking these Acts together, it is an offence to:

- Intentionally or recklessly disturb a bat while it is occupying a structure or place which it uses for shelter or protection (S9:4b).
- Intentionally or recklessly obstruct access to any structure or place used for shelter or protection by a bat (S9:4c).
- The term 'reckless' is defined by the case of Regina v Caldwell 1982. The prosecution has to show that a person either deliberately took an unacceptable risk, or failed to notice or consider an obvious risk.

A bat roost has been interpreted to mean any structure or place which is used for shelter or protection whether or not bats are present at the time. Bat roosts may be defined (Hunt, L, 2012) as either (i) Transition Roosts, (ii) Maternity roosts, (iii) Satellite Roosts, (iv) Mating Roost, (v) Hibernation roosts, (vi) Night Roost, (vii) Day Roost, (viii) Feeding Roost or (ix) Swarming Sites.

Bats are listed under Annexes IIa and IVa of the EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora, or the 'Habitats Directive'. Inclusion on Annex IVa means bats are a European Protected Species (EPS) and protected under the Conservation of Habitats and Species Regulations 2010, thus it is an offence to:

- (a) deliberately capture, injure or kill any wild animal of an EPS,
- (b) deliberately disturb wild animals of any such species, in such a way as –
    - (i) to impair their ability to survive, to breed or reproduce, or to rear their young, or
    - (ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate, or
    - (iii) to affect significantly the local distribution or abundance of the species to which they belong;

A licence to disturb or take bats can be issued for certain purposes under Section 16 of the Wildlife and Countryside Act 1981 and under Regulation 44 of the Conservation of Habitats and Species Regulations 2010 permitting activities that would otherwise be illegal under the legislation. Licences can take up to thirty working days to be issued by Natural England. Where impacts on bats are unavoidable, mitigation will be required to maintain and enhance the favourable conservation status of bats. Losses of bat roosts must be compensated for by the provision of new roosting sites and planting of new foraging habitat. Mitigation measures will need to be designed on a site specific basis and only in consultation with an expert. All mitigation proposals must be agreed with Natural England and put in place prior to the commencement of works.

Great Crested Newt

Great crested newt are a European Protected Species (EPS), receiving full protection under the 1981 Wildlife and Countryside Act (as amended), the 2010 Conservation and Species Regulations and the Countryside and Rights of Way Act (CROW) 2000. This means it is illegal to:

- Intentionally or deliberately capture, injure or kill a great crested newt;
- Deliberately disturb great crested newts or intentionally or recklessly disturb them in a place used for shelter or protection;
- Damage or destroy a breeding site, or resting place;

- Intentionally or recklessly damage, destroy or obstruct access to a place used for shelter or protection; and to
- Possess, sell or offer for sale a great crested newt.

This legislation applies to all life stages of great crested newts. The maximum fine and conviction of offences under Section 9 and Regulation 39 currently stands at £5,000. The CroW Act 2000 amendment also allows for a custodial sentence of up to six months instead or, or in addition to, a fine.

Nesting Birds

Under the Wildlife and Countryside Act 1981 (as amended) all wild birds, their nests and eggs are protected by law and it is an offence to;

- Intentionally kill, injure or take any wild bird
- Intentionally take, damage or destroy the nest of any wild bird while it is in use or being built
- Intentionally take or destroy the egg of any wild bird.

Invasive Species

Section 14(2) of the Wildlife and Countryside Act 1981 (WCA 1981); states that "if any person plants or otherwise causes to grow in the wild any plant which is included in Part II of Schedule 9, he shall be guilty of an offence.". Canadian waterweed is listed on this Schedule.

APPENDIX 4 - BAT ACTIVITY SURVEY RESULTS

5.1 Visit 1 – Dusk Emergence Survey – 2nd July 2018

Survey notes taken by Eve Loxham (Natural England Level 1 Class Licence for bats 2017-28371-CLS-CLS), positioned on the south-eastern elevation using Echometer 3 and Magenta Bat 5 detectors.

Time	Species	Description of Activity
22:35	Common pipistrelle	Heard not seen, nearby commute overhead.
22:44	Common pipistrelle	Heard not seen, nearby commute overhead.

Survey notes taken by Kelly MacGillivray (Natural England Level 2 Class Licence for bats 2017-27638-CLS-CLS) positioned on the northern corner with a view of the north-eastern gable end and the north-western roof elevation using Batbox Duet and Echometer Touch detectors.

Time	Species	Description of Activity
22:19	Unidentified	Possible bat seen to loop near the south-west gable of main building, 2 storey barn section but hard to see.
22:22	Suspected Brown long-eared	No echolocation flew east to west round the back of the barn but didn't seem to have emerged from the barn.
22:29	Common pipistrelle	Heard not seen commuting nearby.
22:32	Common pipistrelle	Brief nearby pass, heard not seen.
22:34	Common pipistrelle	Brief nearby pass, heard not seen.
22:37	Common pipistrelle x2	Flew east to west, north of the barn, followed by a second bat (rapid pass).
22:39	Common pipistrelle	Quick pass, heard not seen nearby. Forage and commute.
22:42	Common pipistrelle	Quick pass, heard not seen nearby. Forage and commute.
22:43	Common pipistrelle	Quick pass, heard not seen nearby. Forage and commute.

Survey notes taken by Marcella Lee-Gallon positioned at the western corner with a view of the south-western gable and north-western roof aspect using Echometer 3 and Magenta detectors.

Time	Species	Description of Activity
22:21	Unidentified	Flew north to west around the building side then dropped between the house and the barn.
22:39	Unidentified	Forage and commute flew north to west in a loop.
22:48	Common pipistrelle	Heard not seen nearby commute overhead.

5.2 Visit 2 – Dawn Re-entry Survey – 18th July 2018

Survey notes taken by Eve Loxham (Natural England Level 1 Class Licence for bats 2017-28371-CLS-CLS), positioned on the south-eastern elevation using Echometer 3 and Magenta Bat 5 detectors.

Time	Species	Description of Activity
3:30	Common pipistrelle	Heard not seen, nearby overhead.
3:36	Myotis	Flew from south then circled barn roof structure twice before flying over the ridge towards the west.
3:39	Common pipistrelle	Heard not seen, overhead pass.
3:42	Common pipistrelle	Forage and commute between the barn and nearby farm building.
3:42	Myotis	Forage and commute between the barn and nearby farm building.
3:44	Myotis	Forage and commute flying from south to north.

3:47	Common pipistrelle	Forage and commute between the barn and nearby farm building, towards the southern end next to the security light.
3:51	Common pipistrelle	Forage and commute between the barn and nearby farm building, towards the southern end and then flew north.
3:53	Myotis	Rapid commute pass, heard not seen.
3:57	Common pipistrelle	Forage and commute between the barn and nearby farm building.
3:59	Myotis	Rapid commute, heard not seen.
4:03	Common pipistrelle	Heard not seen, distant.
4:09	Unidentified	Flew north to south overhead, seen not heard.
4:19	Common pipistrelle	Heard not seen, distant.
4:22	Common pipistrelle	Flew north to south to north, forage and commute between barn and farm building.

Survey notes taken by Kelly MacGillivray (Natural England Level 2 Class Licence for bats 2017-27638-CLS-CLS) positioned on the northern corner with a view of the north-eastern gable end and the north-western roof elevation using Batbox Duet and Echometer Touch detectors.

Time	Species	Description of Activity
03:27	Common pipistrelle	Distant foraging, heard not seen to the north.
03:29	Common pipistrelle	Distant foraging, heard not seen to the north.
03:39	Common pipistrelle	Commuting pass, heard not seen.
03:42	Common pipistrelle	Nearby foraging passes, heard not seen.
03:44	Common pipistrelle	Commuting pass, heard not seen.
03:47	Common pipistrelle	Commuting pass, heard not seen.
03:51	Common pipistrelle	Commuting pass, heard not seen.
03:52	Common pipistrelle	Foraging pass, heard not seen.
03:53	Common pipistrelle	Foraging bat heard not seen, likely same bat as above, passed over yard close by.
03:57	Common pipistrelle	2 bats briefly, then one seen foraging over the yard but not observed very well.
03:59	Common pipistrelle	One pass, then two foraging nearby, heard not seen.
04:02	Common pipistrelle	Nearby foraging passes, heard not seen.
04:07	Common pipistrelle	Commuting pass, heard not seen.
04:12	Common pipistrelle	Nearby commuting pass heard not seen.
04:17	Common pipistrelle	Nearby commuting pass heard not seen.
04:22	Common pipistrelle	More distant commuting pass heard not seen.
04:33	Common pipistrelle	More distant commuting pass heard not seen.

Survey notes taken by Megan Williams positioned on the western corner with a view of the north-western elevation and south-western gable end using Echometer 3 and Magenta detectors.

Time	Species	Description of Activity
03:27	Common pipistrelle	Flew north-east to south-west in front of barn.
03:44	Common pipistrelle	Heard not seen, commuting and foraging.
03:52	Myotis	Commute and forage, heard not seen.
03:54	Common pipistrelle	Two bats forage and commute circle in courtyard in front of the north-western elevation, one flew south and the other north.
03:57	Myotis	Commuting pass, flew south-west to north-east in front of the barn.
04:00	Unidentified	One bat seen flying close to the roof and doing large circles, no echolocation.

04:00	Myotis	Flew north-east to south-west assumed same bat as above.
04:02	Common pipistrelle	Flew out of the woodland to the west, and flew north-east after circling the courtyard.
04:07	Common pipistrelle	Commuting flew south-west to north-east.
04:53	Unidentified	Seen not heard to the north-east of the barn, flew north-east.

5.3 Visit 3 – Dusk Emergence Survey – 1st August 2018

Survey notes taken by Eve Loxham (Natural England Level 1 Class Licence for bats 2017-28371-CLS-CLS), positioned on the south-eastern elevation using Echometer touch and Magenta Bat 5 detectors.

Time	Species	Description of Activity
21:16	Common pipistrelle	Rapid commute east to west between the barn and opposite farm building. Nearby emergence, possibly from farm house.
21:33	Common pipistrelle	Forage and commute west to east and circled between the barn and opposite building once.
21:37	Common pipistrelle	Heard not seen, distant commute.
21:38	Common pipistrelle	Heard not seen at first, then seen forage and commuting towards the south-western edge of the barn and courtyard area.
21:42	Common pipistrelle	Forage and commute over by the western edge of the barn.
21:57	Common pipistrelle	Heard not seen, overhead commute.
22:00	Common pipistrelle	Forage and commute between farm buildings and to the west and east.
22:08	Common pipistrelle	Heard not seen, nearby
22:12	Common pipistrelle	Forage and commute overhead between farm buildings.
22:14	Common pipistrelle	Forage and commute between farm buildings.

Survey notes taken by Kelly MacGillivray (Natural England Level 2 Class Licence for bats 2017-27638-CLS-CLS) positioned on the northern corner with a view of the north-eastern gable end and the north-western roof elevation using Batbox Duet and Echometer Touch detectors.

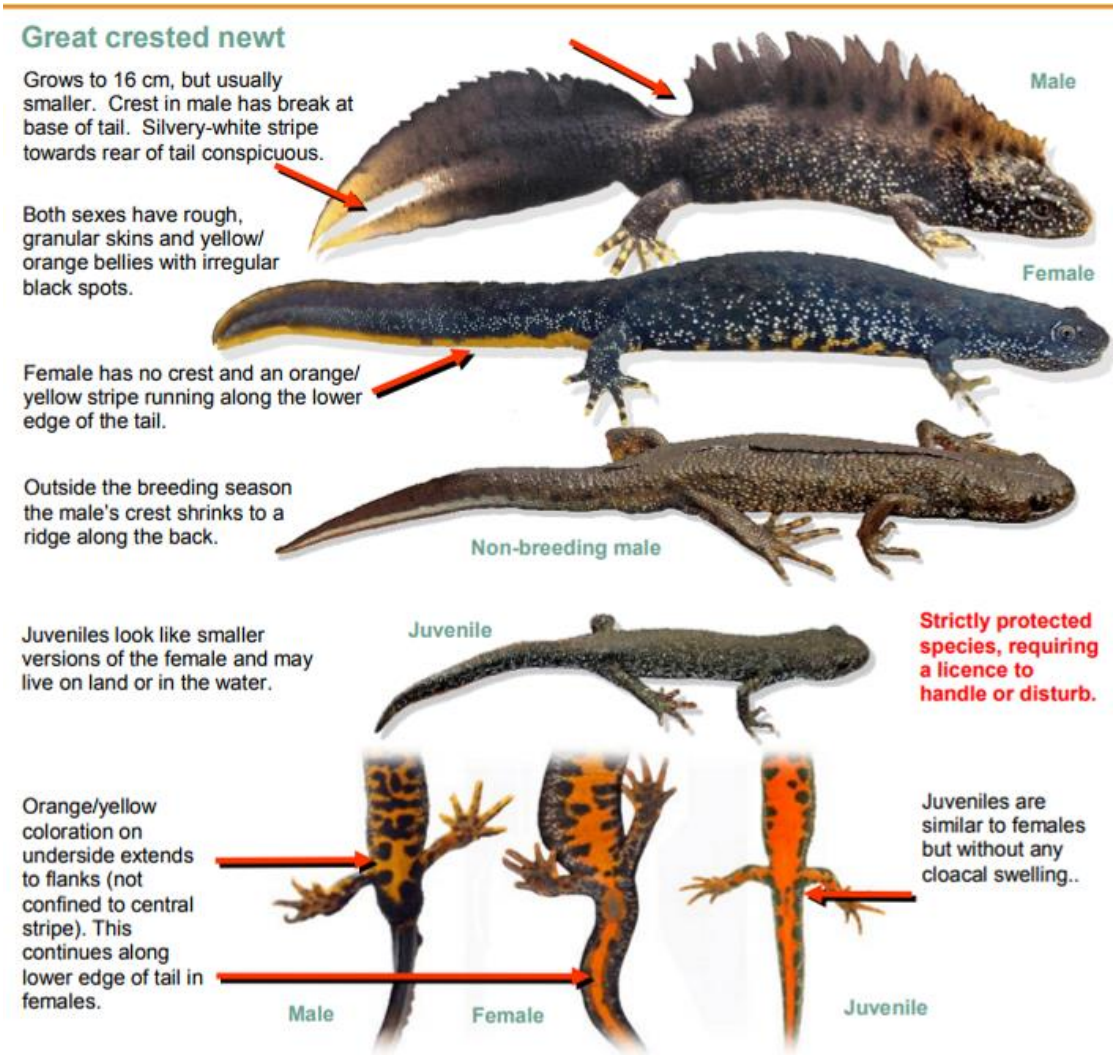
Time	Species	Description of Activity
21:33	Common pipistrelle	Commuting pass heard not seen.
21:45	Soprano pipistrelle	Commuting along treeline west to east overhead.
21:48	Common pipistrelle	Loud commuting pass heard not seen, but sounded west to east and overhead.
21:57	Common pipistrelle	Commuting nearby - heard not seen. Possibly 2 bats briefly at the start of the pass.
22:00	Common pipistrelle	Distorted commuting pass heard not seen.
22:00 - 22:05	Common pipistrelle	Foraging nearby - sounded along treeline and field edge to the north.
22:12 - 22:13	Common pipistrelle	Intermittent foraging passes heard not seen.
22:16	Common pipistrelle	Foraging nearby, heard not seen.

Survey notes taken by Neil Lee-Gallon (Natural England Level 2 Class Licence for bats 2015-10739-CLS-CLS) positioned on the western corner with a view of the north-western elevation and south-western gable end using Echometer 3+ detector.

Time	Species	Description of Activity
21:33	Common pipistrelle	Emergence from centre of roof, rear elevation. See Figure 2 and Photograph 21 for approximate locations of roost.
22:00	Common pipistrelle	Forage and commute, circled above building and over trees to the rear.
22:02	Common pipistrelle	Forage and commute, circled over building and flying from trees to the rear towards the farm house.

22:04	Common pipistrelle	Heard not seen.
22:11	Common pipistrelle	Heard not seen.
22:16	Common pipistrelle	Heard not seen.

APPENDIX 5: GREAT CRESTED NEWT IDENTIFICATION AID (FROM A GUIDE PROVIDED BY AMPHIBIAN AND REPTILE GROUPS OF THE UK)



https://www.arguk.org/info-advice/id-guides/207-amphibian-id-guide-2014-updated - accessed on 27/06/2018.